Better Training for Safer Food

Initiative

Inspector's training organization

Basic element for success. Situation at different MS

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Consumers, Health And Food Executive Agency

- Importance of training
- Basic aspects to be considered
- Materials for training: some examples
- Case studies: Italy and Spain
- Differences among MS

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- SPISE activities and proposal

European Commission

Inspector's training: key element for the success

- The quality of inspections is directly related to the knowledge and professionalism of those responsible for the inspection.
- It is essential that designated inspectors have adequate training and that this is taught by professionals and / or recognized centers.

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Training… or at least Information during the inspection

Results of visual inspection must be explained/commented with the farmer during the procedure itself.

Results of different measurements (nozzle flow rate, pressure gauge, horizontal distribution,…) must be explained (time consuming estimated 5-10 min) immediately after the measurement process.

Those actions will increase the success on the comprehension of inspection bulletin and will promote the modification/changes necessaries on the sprayer

Inspector's training

(Example of Spain)

What?

- Official certificate mandatory for Directors and Technicians of workshops
- This certificate (renewable every 5 years) will be acquired after the attendance to mandatory training courses delivered by official institutions

Who?

- Universities (AgEng Departments)
- Official training centers
- Research and Development Institutes
- Whatever other official institution if considered
- Local authorities will design their own training facilities

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Aspects for organisation

Official responsible of training courses

Inspector's training courses should be delivered by official bodies (universities, research institutes, advisors) which demonstrated their aptitude in teaching and wide knowledge of the contents

Participants requirements

Adequate background on the subject should be requested to attendants. Basic knowledge in agricultural machinery, pesticides, crop protection will help in a good profitability of the course activities.

Training courses: main aspects

Teacher's qualification

High level (professors, researchers, technicians) with demonstrated experience in training activities

Course duration

There is a wide range of variation in actual training courses organised at different EU MS, from 16 to 40 hours. Official organizers should design the adequate length of the courses depending on the background of attendants. Experience from some countries as Italy or Spain indicate that one week training course represents an successful model.

Training courses: main aspects

Course items

SPISE has proposed a full course item's list. MS are invited to take this proposal into account to design and develop training courses based on part or total list, depending on the background level of the attendants.

- Environmental, technical and biological motives for inspection
- Basic knowledge on sprayers
- Legislation and administrative procedures
- Health and safety for inspection staff
- Inspection of PAE
- Test equipment and calibration of test equipment
- Complete practical inspection of PAE
- Calibration of sprayers, adjustment, nozzle selection
- Best Management Practices
- Upgrading of sprayers (new technologies,…)

Proposed structure of training course

Theory (60%)	Practices (40%)	Exam
• *Inspection* • *Calibration* • *Legislation* • *Best Practices* • *Equipment*	• *Equipment* • *Inspection* • *Software* • *Calibration* • *Safety*	• *Test (oral/written)* • *Practical activity*

Training courses: main aspects

Theory & Practices

The total time of the course should be dedicated to theoretical and practical activities. Experience from several MS indicates that practical activities are very well appreciated for the attendants.

Exam

An official exam comprising questions from all the selected topics must be arranged. It is recommended to arrange combined exams, including theoretical questions (oral/written) with practical exercises (complete inspection of at least 1 sprayer).

Training courses: main aspects

Validity of inspector's licence

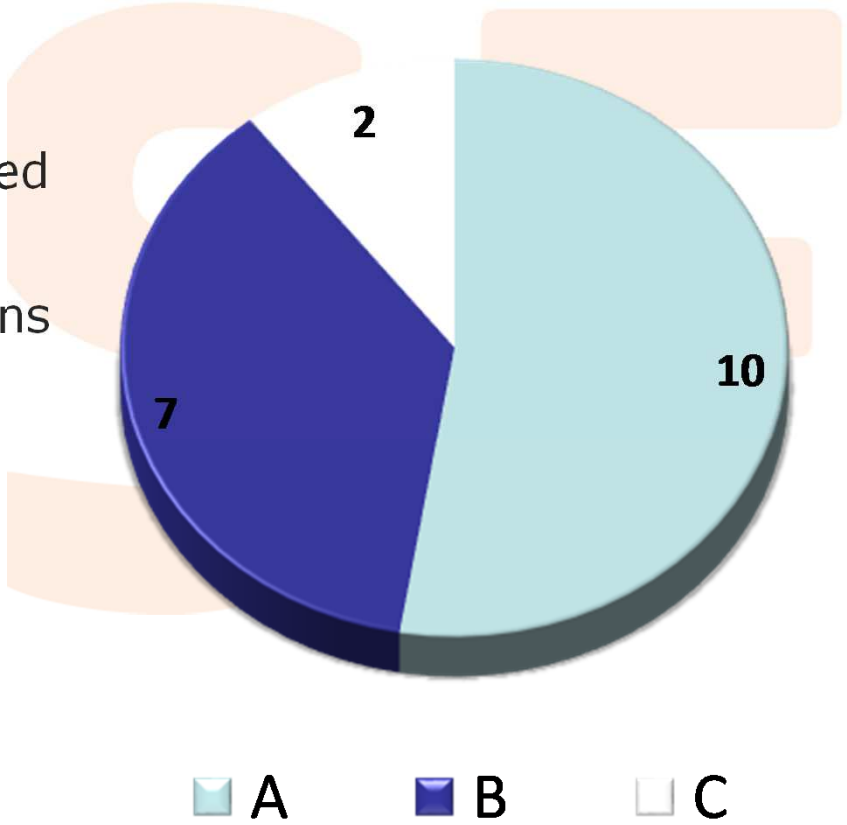
Validity period of inspector's licence vary among EU MS. In general, this period is established between 3-5 years. After this period, is mandatory to follow the officially designed refreshment course.

Refreshment course

A very short course (1-2 days) to upgrade the attendants with the latest news concerning the inspection procedure. Technical, organisational, administrative and legal aspects should be considered in those courses.

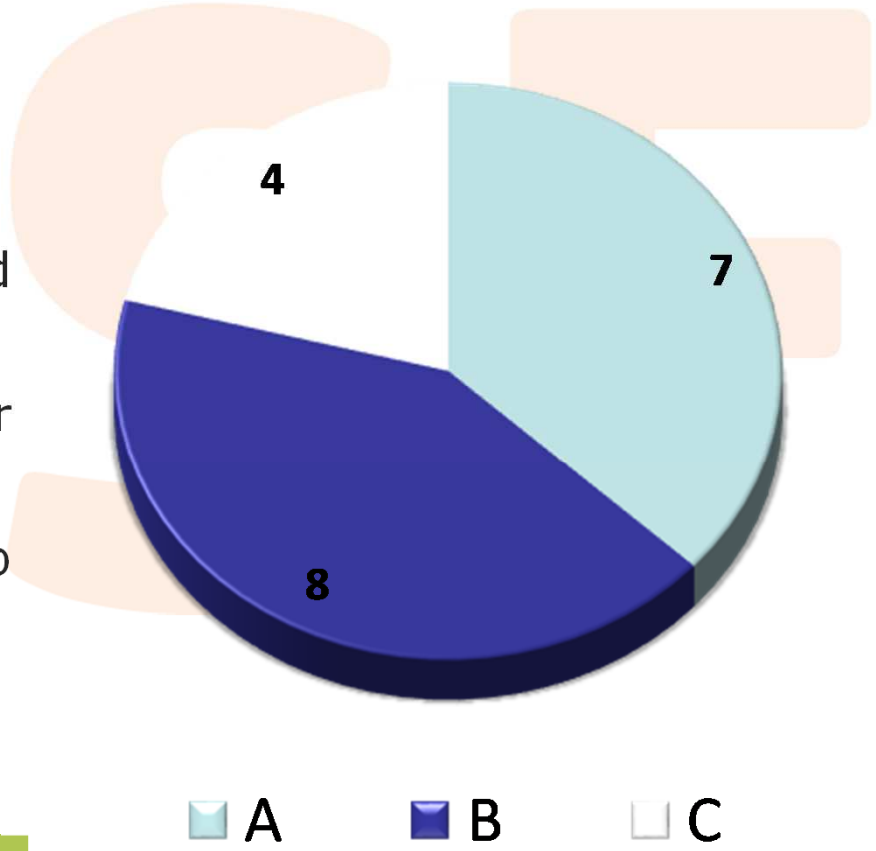
Inspector's training course should be organized/delivered by:

1. Official bodies with recognized experience
2. Official and/or private institutions with experience
3. Only universities



Contents of the inspector's training course

1. Should be defined and harmonized among all MS
2. Every MS should arrange their own course independently
3. Should be focused strictly to inspection topics



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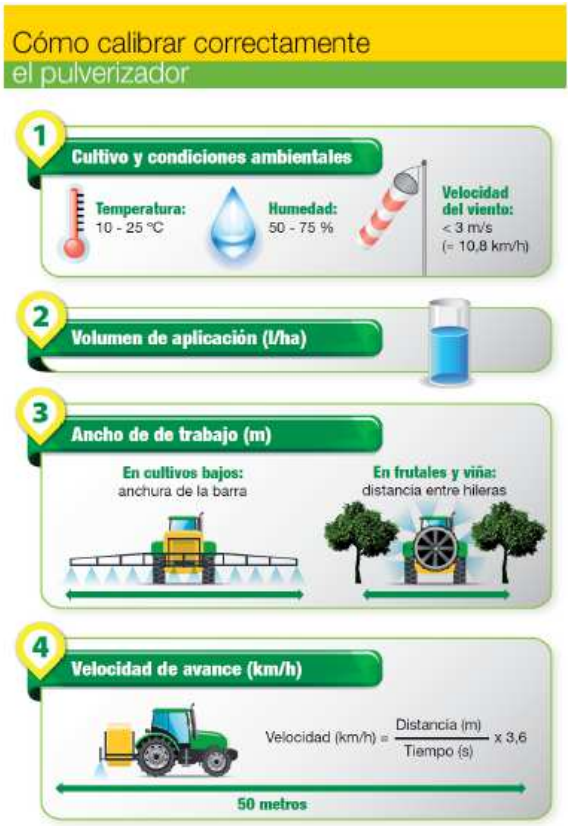
Material for practical activities



Metodología de trabajo

Los ensayos de distribución de la pulverización están basados en las normas ISO 5682-1 y ISO 5682-2. El banco de ensayo consiste en una mesa acanalada en el que se puede medir la distribución cada 50 mm mediante unas probetas graduadas.

1.- Distribución de la pulverización de una boquilla

Condiciones de ensayo.

La presión de ensayo será la presión mínima y la máxima indicada por el fabricante y al menos dos presiones intermedias. El ensayo se realiza a la altura de 500 mm. En el caso de no poder modificar la presión se trabajará a una presión conocida.

Procedimiento

Se sitúa la boquilla verticalmente sobre el banco de distribución, haciendo coincidir su centro con una de sus aristas. Se deja pulverizar la boquilla y se cuantifica el volumen recogido encada probeta, obteniendo así la distribución de la pulverización (Figura. 3).

Figura 3. Ejemplo de distribución horizontal de una boquilla.

Tabla de volumen recogido para otras boquillas analizadas:

Probeta	Boquilla 2 *mL*	Boquilla 3 *mL*	Boquilla 4 *mL*	Boquilla 5 *mL*	Boquilla 6 *mL*
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

TOMA DE DATOS – PULVERIZADOR HIDRONEUMÁTICO

Pre-Inspección

Resguardos t.d.f.:	Sin defecto	Leve	Grave	No procede
Fijación eje t.d.f.:	Sin defecto	Leve	Grave	No procede
Resguardos multiplicador:	Sin defecto	Leve	Grave	No procede
Resguardos ventilador:	Sin defecto	Leve	Grave	No procede
Contenido depósito:	Sin defecto	Leve	Grave	No procede
Limpieza interna:	Sin defecto	Leve	Grave	No procede
Limpieza externa:	Sin defecto	Leve	Grave	No procede

Ventilador

Funcionamiento:	Sin defecto	Leve	Grave	No procede
Desconexión:	Sin defecto	Leve	Grave	No procede

Boquillas

Uniformidad visual:	Sin defecto	Leve	Grave	No procede
Antigotas:	Sin defecto	Leve	Grave	No procede
Dirección:	Sin defecto	Leve	Grave	No procede
Adecuación:	Sin defecto	Leve	Grave	No procede
Simetría:	Sin defecto	Leve	Grave	No procede
Clara individual:	Sin defecto	Leve	Grave	No procede
Orientación:	Sin defecto	Leve	Grave	No procede

Mando de control

Fugas:	Sin defecto	Leve	Grave	No procede
Funcionamiento:	Sin defecto	Leve	Grave	No procede
Situación:	Sin defecto	Leve	Grave	No procede

Bomba

Pulsación a circuito:	Sin defecto	Leve	Grave	No procede
Capacidad:	Sin defecto	Leve	Grave	No procede
Agitación en pulverización:	Sin defecto	Leve	Grave	No procede

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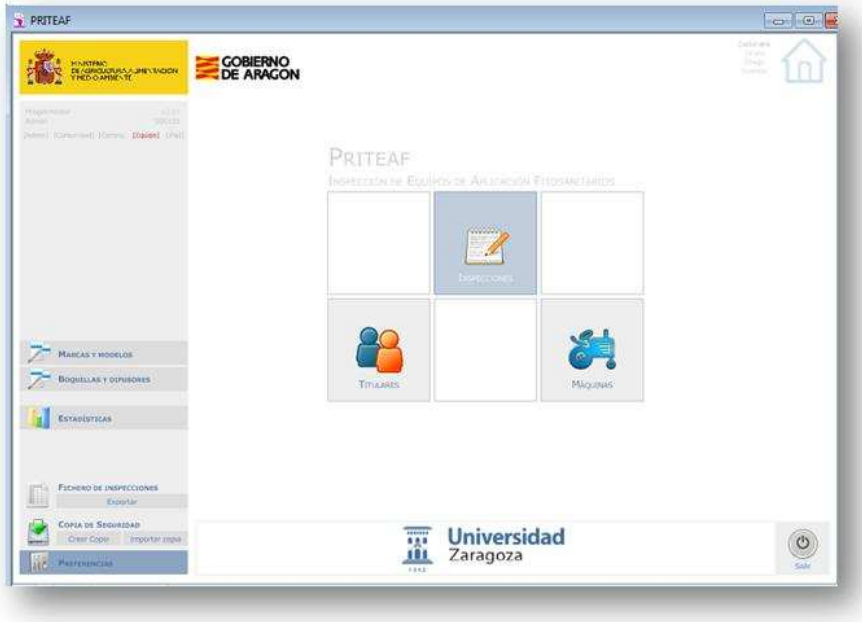
Use dedicated software for inspections



Inspection Unit

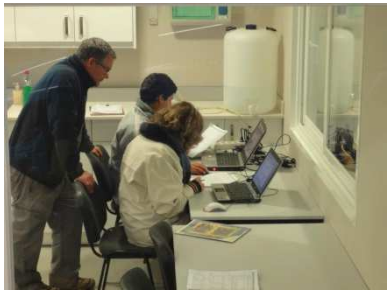
Inspection protocol
Data storage
Sprayer's inspection

Authorized Workshop

Control of inspection units
Database
Transfer info to official body
Official certificates

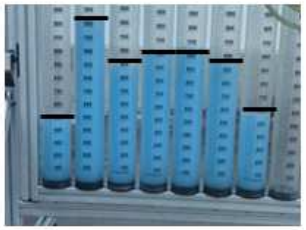
Official authority

Data base
Official registration
Statistics



The exam

- 30 questions multi answer
- Minimum requested mark: 7/10
- Conditions published in the Official Journal of the MS

13. La distribución de caudales de la figura, correspondiente al caudal de 7 boquillas de un pulverizador hidráulico de barras, 	
Es la idónea, pero el pulverizador no está limpio interiormente	A
No es la idónea	B
No es la idónea, pero en la inspección se calificaría como defecto leve	C

14. Si una boquilla de caudal nominal 2 L/min a 3 bar tiene un Diámetro Volumétrico Medio (VMD) 500 micras	
Significa que el 50 % de las gotas que genera son inferiores a 0.5 mm.	A
Significa que "moja" un círculo de 0.5 mm. de diámetro	B
Significa que durante un minuto, vierte un litro de líquido exclusivamente constituido por gotas de diámetro menor de 0.5 mm.	C

APELLIDOS: NOMBRE:

Indica en los cuadros sin sombrear, la respuesta (a, b, c) adecuada a cada pregunta

PREGUNTA	RESPUESTA	PREGUNTA	RESPUESTA
1		16	
2		17	
3		18	
4		19	
5		20	
6		21	
7		22	
8		23	
9		24	
10		25	
11		26	
12		27	
13		28	
14		29	
15		30	

European Commission

Manual of inspections: interesting tool

Spain **Italy** **Sweden** **Serbia**

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Case study: Spain & Italy

- In both cases Agricultural Universities have been responsible of the organization of training activities
- Course length: 40 hours (whole week)
- Theory & Practices: around 60% theory and 40% practices
- Exam: Theory: oral & written; Practices: complete inspection of a sorted sprayer

Spain

Italy

European Commission

Topics of the course

1. General criteria that governs the distribution of plant protection products and their influence on the effectiveness of application, environmental safety and operator safety — THEORY
2. Different types of sprayers: classification, components, features, criteria of choice — THEORY
3. Main types of nozzles used on sprayers — THEORY
4. Different levels of pulverization and spray patterns obtained with different types of nozzles; relationship between flow rate and pressure: (+ practical exercises) — PRACTICAL + THEORY

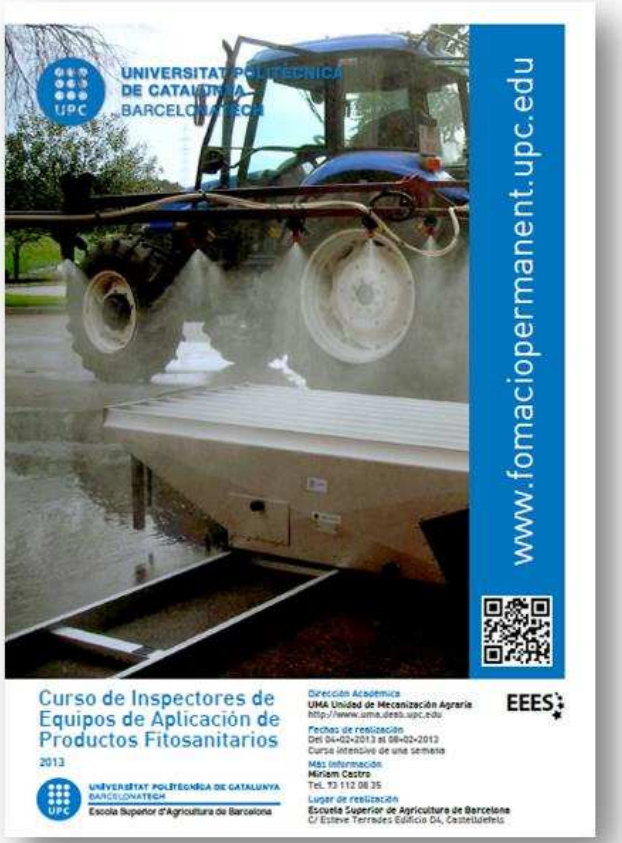
(Balsari et al., 2012 – SPISE)

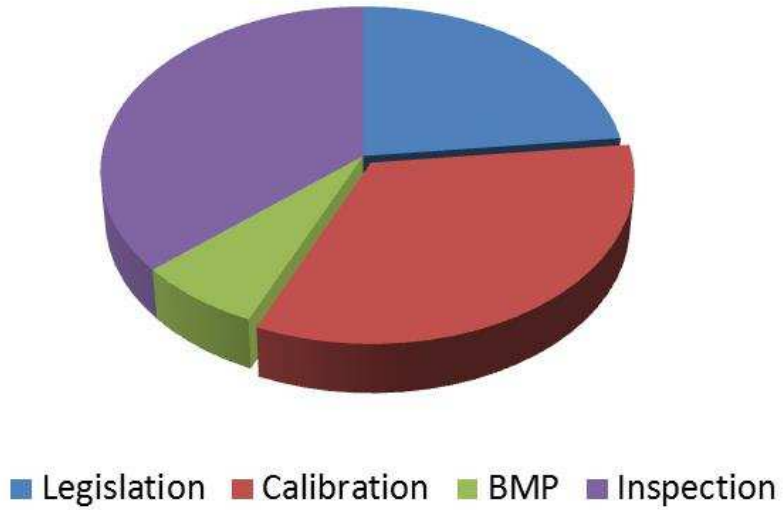
Topics of the course

5. Main sprayer components, functionality of hydraulic circuit and description of possible operating functional problems of sprayers	PRACTICAL
6. Equipment and test benches used for functional inspection: specifications and minimum requirements	THEORY
7. Parameters to examine during functional inspection and their limits of acceptability	THEORY
8. How functional inspection of orchard and boom sprayers is carried out	PRACTICAL
9. Regulatory issues, document management and strict liability of the inspector	THEORY

(Balsari et al., 2012 – SPISE)

Topics of the course





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Practical activities

(Balsari et al., 2012 – SPISE)

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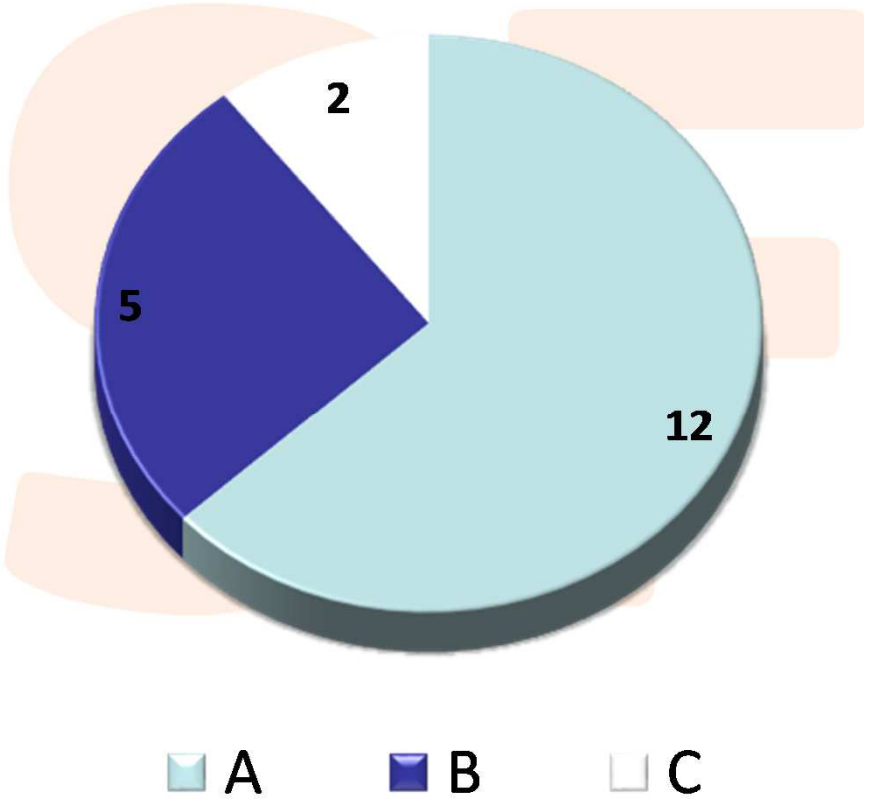
Practical activities

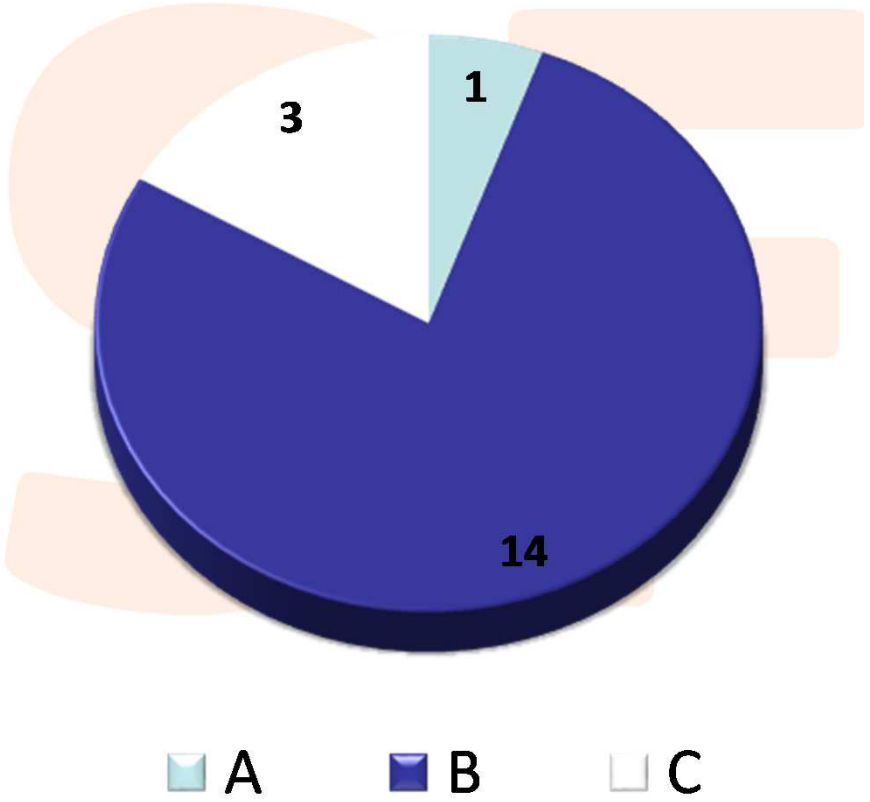
Background of the attendants to the courses:

1. Should be requested according certain minimum of expertise
2. It cannot be defined and courses should be free open
3. It is not relevant for the success of the course



Considering the distribution between theoretical and practical activities

1. Theoretical aspects should be the most important part
2. It should be mandatory a minimum time for practical activities
3. Attendants should have already the practical expertise and inspectors training course should be focused only in legal/administrative procedure



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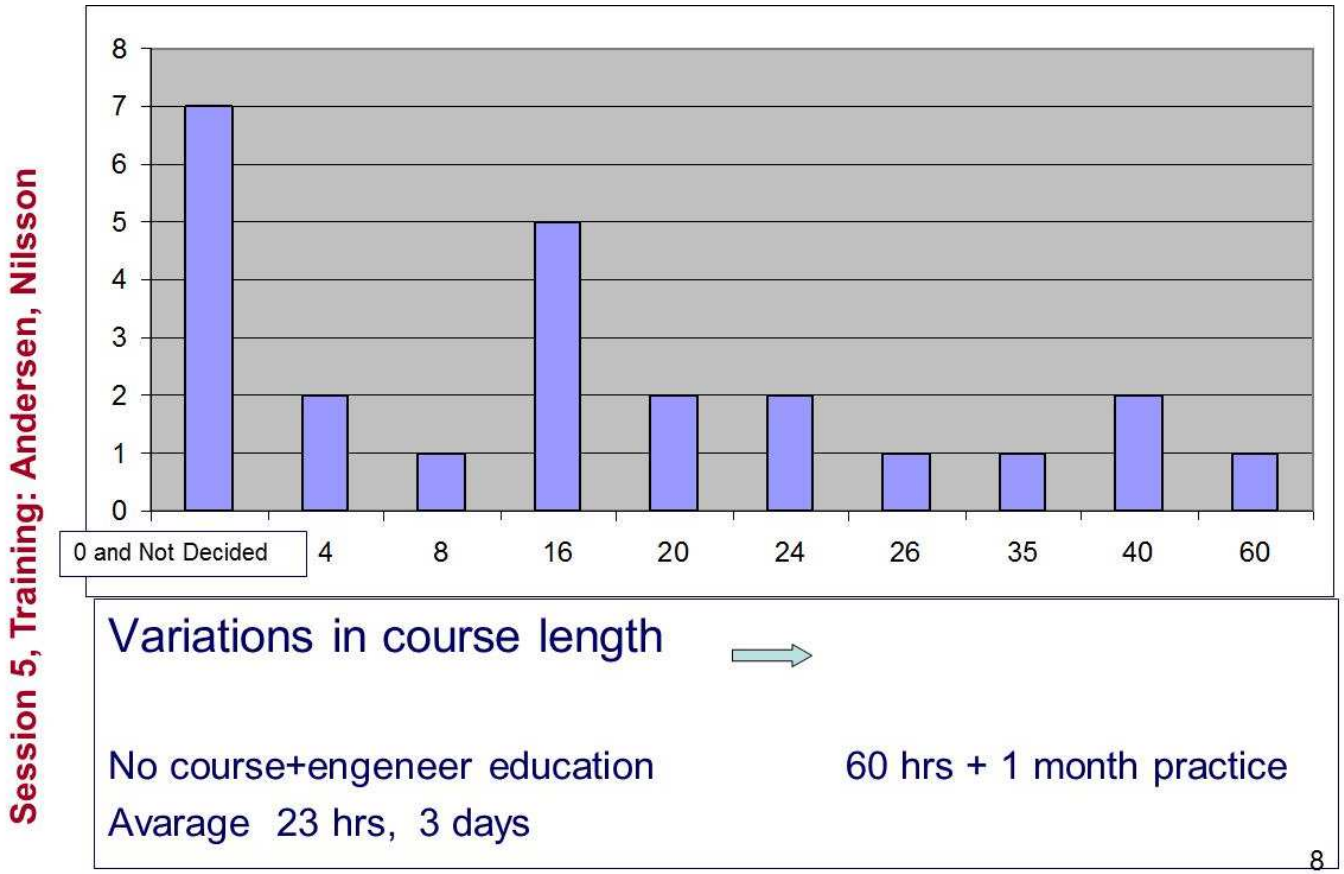
Differences among EU MS



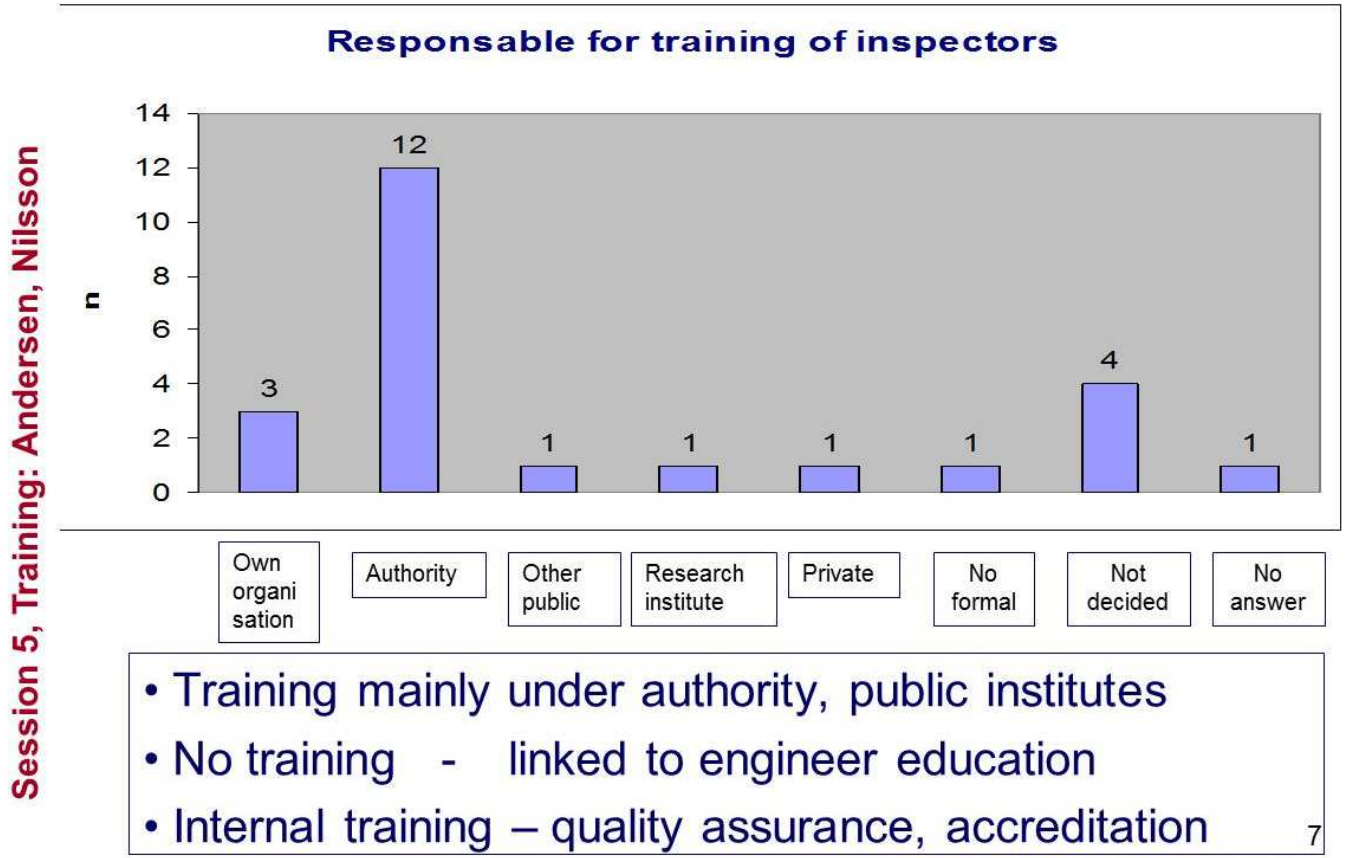
(Andersen & Nilsson, 2012 – SPISE)

Differences among EU MS

4a: Regulations	11 %	(0 - 40)
4.b: Inspection procedure,requirements	20 %	(0 - 40)
4.c: Testing equipment	9 %	(0 - 20)
4.d: Check, calibration of testing equipment	7 %	(0 - 30)
4.e: Practicals	25 %	(10 - 40)
4.f: Sprayer technique, application technology	11 %	(0-25)
4.g: Advising on sprayers:	9 %	(0-20)

(Andersen & Nilsson, 2012 – SPISE)

Differences among EU MS



(Andersen & Nilsson, 2012 – SPISE)

Differences among EU MS

CLOSING SESSION
1 – Summary of conclusions of sessions 1-5

SESSION 5

Training

Chairmen: E. Nilsson, P.-G. Andersen

Closing session

The **importance of an adequate inspectors training** has been deeply underlined and considered a priority to have successful inspections. Nevertheless due to resource limitations and how far process is developed in MS:

1. At present it seems difficult to develop a common course plan.

2. At present it seems difficult to develop common training materials.

3. Good idea to collect training material and course plan for exchange between countries.

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SPISE 4, 27 to 29 March 2012 Lana (Italy)

(Andersen & Nilsson, 2012 – SPISE)

Thank you for your attention.

Prof. Emilio GIL

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